What is claimed is:

1. A method of assembling a semiconductor device forming an encapsulant, comprising:

providing a substrate, having a plurality of semiconductor devices respectively having semiconductor chips electrically connected to a predetermined encapsulation area on a surface of the substrate;

filling an encapsulant overlying the predetermined encapsulation area using stencil printing, and sweeping excess encapsulant over the predetermined encapsulation area at a first air pressure less than approximately 1 atm;

sweeping excess encapsulant from the predetermined encapsulation area over the encapsulant overlying the predetermined encapsulation area using stencil printing at a second air pressure exceeding the first air pressure; and

hardening the encapsulant at a third air pressure exceeding approximately 1atm.

2. The method as claimed in claim 1, wherein each semiconductor chip electrically connects to the substrate using flip chip technology, using a plurality of conductive bumps, arranged at a predetermined pitch among each other between each semiconductor chip and the substrate.

3. The method as claimed in claim 1, wherein the encapsulant overlying the predetermined encapsulation area completely covers the semiconductor chips.

4. The method as claimed in claim 2, wherein the encapsulant overlying the predetermined encapsulation area further fills the areas between each semiconductor chip and the substrate, and among the conductive bumps.

5. The method as claimed in claim 2, wherein the thickness of the encapsulant overlying the predetermined encapsulation area is as large as the sum of the thickness of the conductive bump and that of the semiconductor chip or exceeding.

6. The method as claimed in claim 1, wherein the first air pressure is about 0.1 to 10torr.

7. The method as claimed in claim 1, wherein the third air pressure is as large as 30 kgf/cm^2 or below.

8. The method as claimed in claim 1, wherein the third air pressure is about 3 kgf/cm^2 to 15 kgf/cm^2.

9. The method as claimed in claim 1, wherein the third air pressure is provided by dry air, nitrogen, or inert gases.

10. A method of assembling a semiconductor device, comprising:

providing a substrate and a plurality of semiconductor chips, the substrate having a predetermined

encapsulation area, and a plurality of packaging units, on a surface;

respectively attaching the semiconductor chips to the packaging units, the semiconductor chips respectively electrically connecting to the substrate;

filling an encapsulant overlying the predetermined encapsulation area using stencil printing, sweeping an excess of the encapsulant over the predetermined encapsulation area at a first air pressure below approximately 1 atm;

sweeping excess encapsulant from the predetermined encapsulation area over the encapsulant overlying the predetermined encapsulation area using stencil printing at a second air pressure above the first air pressure;

performing a first hardening step to harden the encapsulant at a third air pressure above approximately 1 atm; and

dividing the substrate into a plurality of semiconductor devices according to the packaging units.

11. The method as claimed in claim 10, wherein each semiconductor chip electrically connects to the substrate using flip chip technology, using a plurality of conductive bumps, arranged at a predetermined pitch among each other between each semiconductor chip and the substrate.

12. The method as claimed in claim 10, wherein the encapsulant overlying the predetermined encapsulation area completely covers the semiconductor chips.

13. The method as claimed in claim 11, wherein the encapsulant overlying the predetermined encapsulation area further fills the area between each semiconductor chip and the substrate, and among the conductive bumps.

14. The method as claimed in claim 11, wherein the thickness of the encapsulant overlying the predetermined encapsulation area is as large as the sum of the thickness of the conductive bump and that of the semiconductor chip or above.

15. The method as claimed in claim 10, wherein the first air pressure is about 0.1 torr to 10 torrs.

16. The method as claimed in claim 10, wherein the third air pressure is as large as 30 kgf/cm^2 or below.

17. The method as claimed in claim 10, wherein the third air pressure is about 3 kgf/cm^2 to 15 kgf/cm^2.

18. The method as claimed in claim 10, wherein the third air pressure is provided by dry air, nitrogen, or inert gases.

19. The method as claimed in claim 10, further comprising performing a second hardening step to completely harden the encapsulant.

20. The method as claimed in claim 10, further comprising forming a plurality of leads or connecting balls overlying the semiconductor devices.